Enables GPRS connections with any serial devices at various baud rates using virtual COMs

Symonet

SYMMETRON
ELECTRONIC APPLICATIONS

Symonet modem acts as a bridge between your computer's local COM port and a remote RS-232 device with the same modem and SIM card, using virtual COM ports.

Features
- Via Diameson Gateway (Symmetron's public software server), GPRS communication with Symonet is possible via a dynamic IP SIM card. (Symonet acts as a client to Diameson).
- Static IP SIM card and ADSL connection are not required.
- Continuous online or on demand GPRS communication.
- Creates independent virtual COM ports in your computer, one for each remote device.
- Access up to 3 (one at a time), RS-232 remote devices, using the same modem and same SIM card.
- 1200 to 38400 baud (default: 9600). 8 bit no parity, 7 bit w/parity. Hardware/software flow control.
- Via Diameson, no one can access your remote devices without your Username, Password and Symonet serial number.
- May be used to create virtual RS-485 Master-Slave networks.
- Symonet may also be configured as a server (using a static IP SIM) or in GSM data mode.

Additional Functionality With Stylitis Data Loggers
- Automatic encrypted data emailing via GPRS, at least once a day (programmable interval).
- SMS alerts. Sends SMS to specified phone number if the system's power supply is found low.
- Replies to SMS messages. Check instantaneous Counter and Analog values from cell phone.

Symonet features:

- Serial Ports
  - 1 DTE (MASTER port). Used to access a device locally or to adjust Symonet settings locally.
  - 3 DCE (DEVICE1, DEVICE2 and DEVICE3 ports). Used to connect up to 3 RS-232 serial devices.
- SIM Card slot
- Antenna Slot
- Status leds
  - Red : MODEM, DEVICE1, DEVICE2 and DEVICE3. Led statuses:
    - All 4 permanently lit. Indicating boot-up
    - Only MODEM led flashing, the others OFF. No Serial Device is scheduled to be connected at the time.
    - MODEM led and 1 DEVICE led permanently lit. The specific device is available for communication.
    - Any leds flashing. Communication with a serial device is not possible. A process is being performed.
  - Green (MODEM STATUS), indicating the signal status:
    - Flashing quickly. The modem is not registered in the network.
    - Flashing Slowly. The modem is registered in the network.
    - Permanently lit. A connection (only in GSM data mode) is in progress.
    - Permanently off. The modem power is off. No Serial Device is scheduled to be connected or a computer COM port is connected to the MASTER port for local communication.
- Enclosure:
  - Small, portable
  - Plastic ABS
  - DIMENSIONS:140 x 110 x 35 mm.
  - WEIGHT: 250g

Symonet's operating modes are:

- AUTO MODE. This is the default mode, in which Symonet is available for remote communication, with the modem and a serial device (see next chapter for remote communication modes- modem operations). The device available for communication is selectable, manually and automatically, according to Symonet's settings.

- CONTROL MODE. This is the mode in which Symonet's settings can be adjusted. When in control mode, communication with the serial devices is deactivated. You can enter control mode, either remotely or locally via Symonet Programmer software (see Chapter 10).

- RTS MODE. Symonet also supports serial devices which use RTS flow control. This operation functions if the modem is not connected, ie if a computer is not connected in GSM/data mode or in GPRS/server mode or Symonet is not in GPRS/client mode (see next chapter for remote communication modes). When the device requests to send, AUTO MODE is interrupted and if its serial port is not already open, it opens for the device to send data and stays open for 40 sec after the last character is sent.

- EMAIL MODE. This is a special operation, which has meaning only if Symonet is used with a Stylitis-41 or a Stylitis-101 datalogger (connected to DEVICE1 serial port). If emails are enabled, AUTO MODE is interrupted at least once a day (the interval is user selectable in CONTROL MODE) for an encrypted (according to the datalogger's password.

Communicate with Symonet, either locally, or remotely, via various ways, according to the modem's operation. Communicate via SymonetCOM software (see Chapter 10) or Stylitis Explorer software (if you communicate with a Stylitis-41 or 101 datalogger):

1. Locally
2. Via GPRS, using a cheap Dynamic IP SIM Card (via Diameson Server)
3. With multiple Symonets via Diameson Server (virtual Master-Slave RS-485 network)
4. Via GPRS, using a static IP SIM Card
5. Via a GSM data call

1. Locally

Serial
Device(s) ⟵ RS-232 ⟶ ⟵ RS-232 ⟶

- Connect a null modem serial cable between your computer COM port and Symonet's MASTER port. Then, the modem is deactivated (green led: OFF). This way you can:
  - Access the serial devices locally. Symonet acts as a multiplexer
  - Program Symonet settings (in CONTROL MODE) locally, via Symonet Programmer (see Chapter 11)

- Connect a straight serial cable between your computer COM port and Symonet's active DEVICE port (the one indicated by the red DEVICE led, permanently lit). This way you cannot communicate with the serial device, but you can only program Symonet's settings locally.

2. Via GPRS, using a cheap Dynamic IP SIM Card (via Diameson Server)

Serial Device(s) ⟷ RS-232 [device] ⟷ GPRS Network ⟷ Diameson Gateway ⟷ internet ⟷ Virtual COM [monitor]
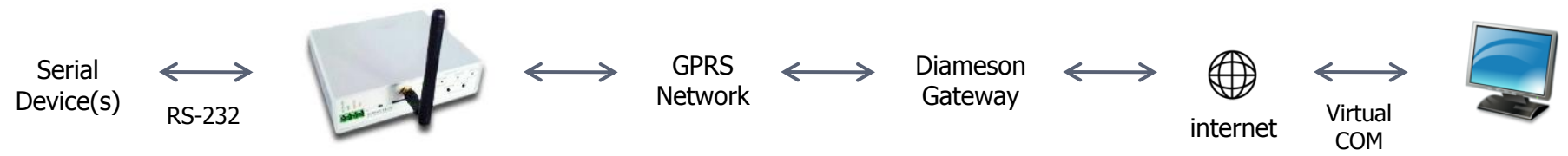
- Neither ADSL (static IP) connection is required for Symonet nor expensive static IP SIM cards.
- A cheap *dynamic IP GPRS* SIM card is required.
- Low operation cost: Symonet is permanently online, but only data exchange is charged.
- Symonets and Computers (via *SymonetCOM* and *Stylitis Explorer* software) are connected as clients to **Diameson Gateway**, Symmetron's server software.
- Symmetron's Diameson is available for connections, but you can use your own Diameson, to manage your own devices.
- After connecting, you can either communicate with a serial device or adjust Symonet's settings, via *Symonet Programmer* (see **Chapter 11**), remotely.
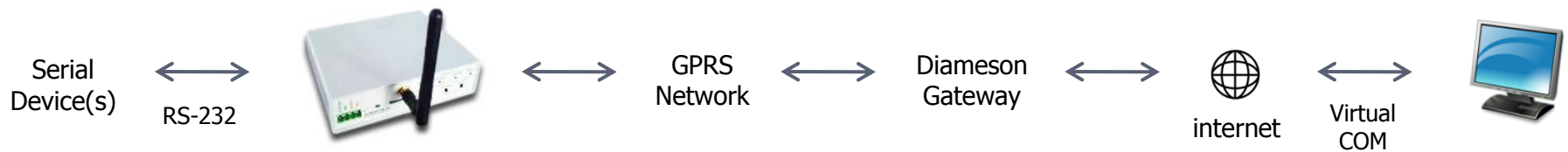
3. With multiple Symonets via Diameson Server (virtual Master-Slave RS-485 network)

Serial
Device 1

RS-232

Symonet 1

GPRS
Network

Diameson
Gateway

internet

Virtual
COM

Serial
Device n

RS-232
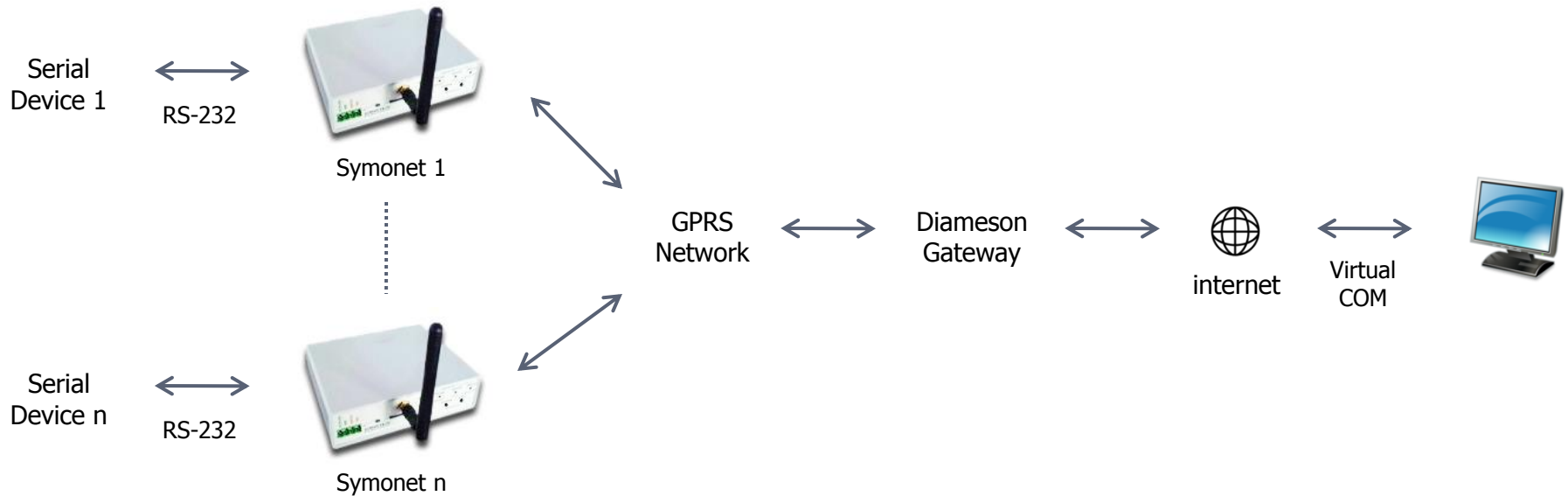
Symonet n

- Communicate with multiple Symonets, via Diameson Gateway.
- Again, one cheap dynamic IP GPRS SIM card is required per Symonet.
- Symonets act like Slaves and the computer, via the appropriate software, acts like the Master.
- Master transmissions are sent to all Slaves.
- Transmissions from any Slave are sent to Master.
- In this case, after connecting, you can communicate with all serial devices, but you cannot adjust Symonets' settings settings, via Symonet Programmer, remotely.

3. Via GPRS, using a static IP SIM Card

| Serial Device(s) | ⟷ RS-232 | [Symonet device] | ⟷ | GPRS Network | ⟷ | Diameson Gateway | ⟷ | internet | ⟷ Virtual COM | [monitor] |

- A GPRS static IP SIM card is required.
- Again, only data exchange is charged.
- Symonet acts like a server, and the computer connecting to it acts as its client.
- After connecting, you can either communicate with a serial device or adjust Symonet's settings, via Symonet Programmer (see Chapter 11), remotely.

4. Via a GSM data call

Serial Device(s) ⟷ RS-232 [GSM device image] ⟷ GSM Network ⟷ GSM Modem ⟷ RS-232 [computer monitor]

- Connect a GSM modem to a computer COM port.
- Call the Symonet, provided that the SIM cards of both the GSM modem and of Symonet support GSM data calls.
- After connecting, you can either communicate with a serial device or adjust Symonet's settings, via Symonet Programmer (see Chapter 11), remotely.

In order to communicate remotely with Symonet via one of the previous ways , a connection using virtual COM ports must be created. This can be done via (free *SymonetCOM* software…):
- *Stylitis Explorer* software, if you wish to connect to a Stylitis-41 or 101 datalogger.
- *SymonetCOM* software, for communication with any other serial device.

- SymonetCOM is the *COM port connector* software, i.e. it connects with one or more Symonets, via one of the previous methods and:
  - It creates a virtual COM port.
  - It opens a specific Symonet DEVICE port manually (to communicate with the corresponding device).
  - Then, the appropriate software can open this COM port, as if it was a local computer COM port. The software defines the *baud rate, parity, length bits* and *stop bits* parameters.
  NOTE: There is the option for this software to be *Symonet Programmer*, to adjust Symonet's settings remotely. This option is not available in a *Master-Slave* connection, as stated before.
- SymonetCOM can also open Symonet Programmer *locally*, without connecting to Symonet.
- There is also the option of using an existing *physical* computer COM port. In this case:
  - SymonetCOM does not create the port but it is the software which opens it.
  - Therefore, SymonetCOM defines the *baud rate, parity, length bits* and *stop bits* parameters.
  - This option is useful if there is a device which can be connected to the computer COM port and communicate with the remote serial device(s).
- Alternatively, if you wish to connect to a Stylitis-41 or 101 datalogger, communicate remotely and adjust Symonet's settings via *Stylitis Explorer*, the dataloggers' free operating software. In this case, Stylitis Explorer communicates directly to the logger (connected to DEVICE1 port) and it can create a virtual COM port and open it via *Symonet Programmer.*

Symonet Programmer is an add-on software to *SymonetCOM* and to *Stylitis Explorer*, used to adjust Symonet's settings in CONTROL MODE. Besides configuring parameters, you can also view some data: Symonet's *Serial Number*, *Battery Voltage* (power supply) and *Time* (you can also change Time). The settings to be adjusted are:

- *Baud Rate.* The 4 serial ports baud rate. Available bauds: 1200, 2400, 4800, 9600, 19200, 38400.

- *Password.* The Password is used to enter control mode and for GPRS connections to Diameson.

- *SMS Alert Number.* A cellphone number to which an SMS alert will be sent if the power supply voltage is found below 11V.

- *Communication mode.* The modem's operation is selected: *GPRS client mode* (via *Diameson* server, a *dynamic IP* SIM is needed), *GPRS server mode* (a *static IP* SIM is needed) or GSM data mode (a GSM data SIM card is needed).

- *GPRS Settings.* For GPRS connections (*client* or *server* mode), type the SIM card provider's settings: APN, User Name, Password. For client mode, type also the IP address and the port number for Devices (Symonets) of Diameson's computer.

- *Peripheral Schedule.* You can set a time schedule during the day, according to which each peripheral device (connected to Symonet's DEVICE ports) will be available for communication (and the corresponding port will be open). The ON and OFF time of each port is a 10min multiple. Alternatively, you can also bypass the schedule and select *manually* for a DEVICE port to open.

- *Email Settings.* If you are using a Stylitis-41 or a Stylitis-101 datalogger, and you have enabled data emailing, you will receive your data at least once a day, in an encrypted file. The parameters to be set are: the email interval (from every 24h to every hour), the sender and recipient, the SIM card's SMTP mail server and, if the SIM card requires authentication, the email account's User Name and Password.
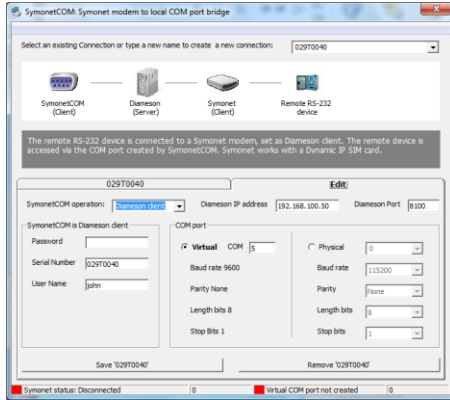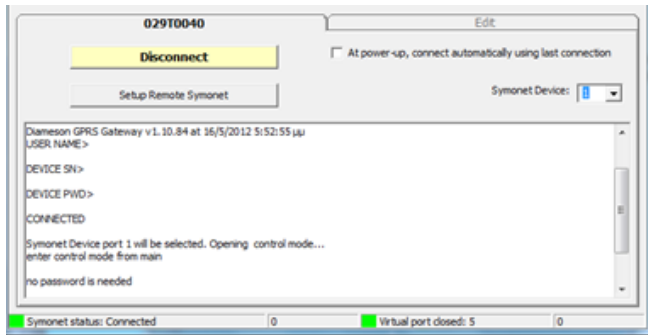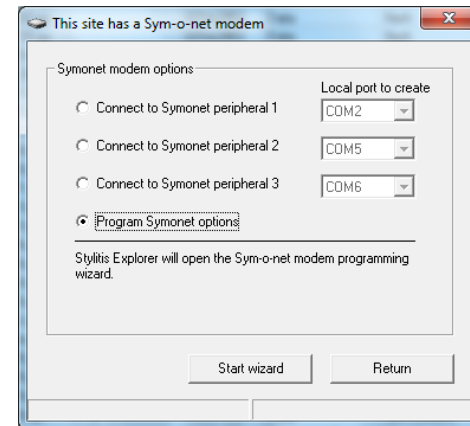
Modem operation, etc settings in SymonetCOM
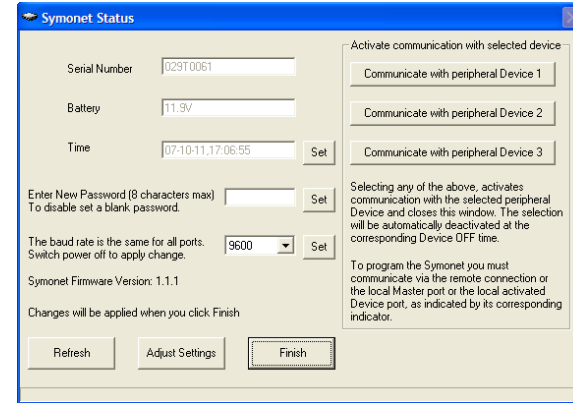
Set Time, Baud rate and Password and enable a device manually

Connected in SymonetCOM

Virtual COM creation and Symonet programming via Stylitis Explorer

Via Symonet you could:

- Communicate remotely to any serial controlled device at various baud rates.
- Communicate with Stylitis-41/101 data loggers and receive encrypted data emails.

Summing up, its main advantages are:

- Variety of communication methods.
- Especially, GPRS communication with one or more Symonets using a cheap dynamic IP SIM.
- Free operating and settings software.
- Serial device baud rates supported: 1200 to 38400.
- Portability, thanks to its small size.
- Encrypted data emailing and SMS with instant channel values, if used with a Stylitis-41/101 data logger.
- Alarm SMS if the power supply is found low.

Contact Information

For more information, please contact with Symmetron company.

Web site: www.symmetron.gr
Telephone: +30-210-6034002
Fax: +30-210-6034003
E-mail: info@Symmetron.gr

Our mailing address is:
Symmetron Electronic Applications 1, Antikythiron Street
Gerakas, Attiki 15344, Greece.